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ABSTRACT

This report describes the aspirations and inspirations as well as the data collection and analyses which constituted the first phase of activity under the Mellon Foundation grant to examine collection development and management at Cornell. The emphasis is mainly on analytical and planning processes rather than specific results during this first phase. Efforts for constituting a unified model for collection development have centered on identifying and elaborating the factors affecting these processes and on locating ways to evaluate each. Data collection is incomplete and some data elements may remain intractable: however, a comprehensive model remains a goal. This report, laying a foundation for research and planning during the second phase, is divided into eight sections. The first provides background and an overview. The second defines project goals in specific terms and develops a strategy to achieve them. The next three illustrate specific data gathered for purposes of collection development and evaluation. The focus is shifted in section six to various levels of decisions and decision-making within the libraries. Section seven concerns activities pertinent to collection management at Cornell and section eight summarizes the report. Appendices include project working papers, a summary list of data collected, and project chronology. (RAA)

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COLLECTION DEVELOPMENT AND MANAGEMENT AT CORNELL

An Interim Report on Activities of the Cornell University Libraries' Project for Collection Development and Management
July 1977--June 1979

Prepared Under a Grant from the Andrew W. Mellon Foundation

by Hendrik Edelman
and Dan C. Hazen

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Cornell University Libraries
Ithaca, New York 14853
December 1979

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Names and abbreviations for specific units of the Cornell University Libraries appear in both text and charts and refer to the following entities. We have indicated collecting emphases only when these are not apparent from the name.

Africana:	Africana Studies Library.
BPA:	Business and Public Administration Library.
Eng., Engineering:	Engineering Library.
Fine Arts:	Fine Arts Library.
Hotel:	Hotel Administration Library.
I&LR, ILR:	Industrial and Labor Relations (Catherwood) Library.
Law:	Law Library.
Mann:	Albert R. Mann Library. (The principal facility for the Colleges of Agriculture and Life Sciences and of Human Ecology.
Math.:	Mathematics Library.
Music:	Music Library.
Olin:	John M. Olin Library. (The principal research facility for the humanities and the social sciences.)
Physical Sciences:	Physical Sciences Library.
Undergraduate, Uris:	Uris Library. (The undergraduate library.)
Vet.:	Veterinary Library.
Wason/Echols:	Wason Collection on China and the Chinese; the John M. Echols Collection on Southeast Asia.

PREFACE

This report of the first stage of the Cornell Collection Development and Management Project was prepared and written by Hendrik Edelman, the Project Director from July 1977 to December 1978, with the close collaboration and editorial assistance of Dan C. Hazen, Latin American Librarian in the Cornell University Libraries' Division of Collection Development. It presents the conceptual thinking that went on during Mr. Edelman's very fruitful time as Project Director and the general approach and methodology which emerged from it. At a somewhat different level, this report reviews the data collecting activities which were organized and put in train by Mr. Edelman and his rationale for the collection development and management functions at Cornell.

The conceptual framework, the methodology, and the collection of data were explored very thoroughly by Mr. Edelman in a series of weekly staff seminars during the Fall and Spring terms of 1977/78. These played a significant part in the Project by helping Mr. Edelman to define and design the work to be carried on and to clarify the concepts which he had developed during his term as Cornell's Assistant Director for the Development of Collections. Furthermore, the seminars had a significant impact on the library staff who were directly involved in the selection process by making them more aware of the relationship between their day-to-day problems and decisions and the general policies of the University library system, and by improving their understanding of collection development and collection management. This became extremely important because, as Mr. Edelman explains in the body of his report, he expected that changes would be implemented with respect to the system's various policies, procedures, and practices even as the system was under study.

This project, consequently, has not been viewed as simply a study of a system or of a set of policies and processes, but rather as an integral part of the process of change and development of a major array of functions within a large library system. We hope that the changes which the Project stimulates will be initiated with greater self-consciousness and direction than if the organization were simply responding to the usual pressures and crises which arise in the course of doing business. Examples of major changes deriving from the Project, or related directly to it, are the experimental reorganization of the collection

development function in the Olin Library; concurrent efforts to rationalize, analyze, and reorganize the earth sciences collections; and the guidelines and procedures being developed for the Libraries' storage collections. We see the Project as an action program, conducted concurrently with the planning exercise of which it is an integral part. The actions and changes now being carried out are considered experimental, and they may be discarded or further modified as the Project progresses.

In the next phase we anticipate that there will be some shift in our approach to our goals and objectives. The objectives themselves will be further refined as a result of the thinking and activity reported in the Interim Report, and our work will focus more clearly on specific issues and problems and on applications of the data which were collected while developing the methodology. For example, our major endeavor as the second phase begins is an extensive survey of the users of the research collections. Faculty, research staff, and graduate students are being asked to evaluate the collections that support their fields of research and to appraise the adequacy of their access to those resources.

The shift in approach also reflects the refined theoretical base which project activities have allowed. While the collection development model elaborated in conjunction with the Project's second phase in some ways will expand only upon the implicit structure previously devised, there are also significant differences.

Mr. Edelman presented and defended the first-stage model, which was articulated most forcefully during the Collection Development Seminars, and which is also reflected in this first-phase report. This model, like that now under discussion, worked from an analytical base of individual Collections and implied Collections, defined in terms of classification segments. The procedures for identifying and aggregating individual collection statements have since been refined. The relationship between library Collections and areas of knowledge has likewise been reworked. The first-phase model omitted any ideal construct for information transactions within a field and thereby passed over the transactional nature of information--a feature which has subsequently received greater emphasis. Finally, our current model attempts a more comprehensive and systematic presentation of the various factors affecting collection development. Our progress on the Project has allowed these modifications in the collection

development model; we expect our understanding to advance still further as our activities continue.

Ithaca
December 1979

J. Gormly Miller
Project Director and
Director of Libraries, Retired

I. INTRODUCTION AND BACKGROUND

Large university libraries, including Cornell's, lack extensive information on the composition and growth of their collections. This lack has proved a serious handicap in the long-term planning process.[1] Despite Cornell's tremendously successful development efforts during the period between 1947 and 1970, collection development planning has never been fully articulated. Space planning for the collections, having derived from gross and often inaccurate figures and being influenced more by immediate possibilities than by actual needs, has also been spontaneous.

Cornell's concept of growth changed dramatically in the 1970s.[2] Enrollment was stabilized, campus planners declared a virtual moratorium on central campus construction, University expenditures began to outstrip income. The pinch was felt strongly in the Libraries, where several major issues emerged with relation to the collections. A 1975 self-study of the library system identified these issues as follows:[3]

A. Cornell had not maintained its previous acquisitions levels for scientific and scholarly literature. The drop resulted from a series of influences, among which were inflation, dollar devaluation, a burgeoning number of serial titles, and inadequate funding. Despite continuing adjustments in the selection process, faculty dissatisfaction began to surface.

B. Shifts in the nature of academic literary output (primary versus secondary sources, science versus the humanities, serials versus monographs) forced shifts in the allocation of acquisitions funds among the various disciplines. Both faculty members and deans expressed concern over the allocation methodology.

C. Despite the reduced acquisitions rate, available space was dwindling in most campus libraries, and the University administration voiced serious misgivings over the implications of library growth for new library buildings.

These concerns, along with a number of related issues, were discussed with officials of the Andrew W. Mellon Foundation. The result was a funding application

for a major, long-term planning effort. Funding was received in June 1977, and the project was inaugurated in August of that year. Assistant Director for the Development of Collections Hendrik Edelman administered the Project through December 1978, when he left Cornell to head the Rutgers University Libraries. Grant-related activities then remained at a low level until the summer of 1979, when J. Gormly Miller, Cornell's former Director of Libraries, was recalled from retirement and designated Project Director.

Cornell's concern for collection development and management has by no means been unique. A number of efforts, both institutional and individual, have enriched the intellectual context for this study. Much of the prior activity has been surveyed and summarized by Rose Mary Magrill and Mona East. Prominent among contemporary efforts are those of the State University of New York's Central Administration, specifically directed toward the rationalization of SUNY's allocation process; the Collection Analysis Projects carried out under the auspices of the Association of Research Libraries' Office of Management Studies; and the joint Stanford-Berkeley collection development project.[4]

By summarizing Project activities under Mr. Edelman's direction, this report will lay a foundation for planning and research activities during the Project's second phase. The report is divided into eight sections. The first provides background and an overview of the report. Section two comprises two parts, the first on the effort to define Project goals in more specific terms, and the second on the process of developing a strategy to achieve these goals. Sections three, four, and five illustrate the specific data gathered for purposes of collection description and evaluation. Section six shifts the focus to the various levels of decisions and decision-making within the Libraries. The next section concerns activities pertinent to collection management at Cornell. Finally, section eight provides a brief summary of the report.

II. OBJECTIVES AND METHODOLOGY

Objectives

Three major issues prompted Cornell's proposal for an in-depth study of collection development and management:

A. A perceptible decline in acquisitions in the face of a series of environmental pressures;

B. Growing concern over the methodology for allocating funds among subject fields and among areas of study and research;

C. The implications of library growth and concern over the seemingly endless demand for additional library space.

Several other questions regarding Cornell's collections also required consideration in defining the project. These included:

1. The optimum distribution of materials among and within the libraries on campus. There are several areas of substantial overlapping, and the materials appropriate to some subject fields are scattered between several libraries.
2. The determination of which materials should be available on the central campus, in Cornell's Annex Library, in other libraries in the region, and in other libraries anywhere in the world.
3. The related consideration of how Cornell should enter into resource-sharing proposals, and the linkages between geographic centrality or isolation and the utilization of cooperative agreements. At present, there is neither a common language nor a conceptual framework for cooperative arrangements related to collection development.
4. A mechanism for decision-making in the area of collection management, incorporating such considerations as added copies, replacements, preservation, and the retention of material. A related issue involves determination of the most appropriate and/or economical physical formats for different sorts of materials, particularly as between microform and hard copy.

5. The need to determine the physical growth rate of different types and classes of information resources (periodicals versus government publications, chemistry books versus materials on philosophy) for better anticipation of space needs.
6. Inquiries into alternative formats and modes of bibliographic control for certain groups or classes of materials. The goal of easy user access might in fact be better served by other modes of bibliographic control than the exhaustive cataloging to which we are accustomed, at least under certain circumstances.

The efforts to predict and plan collection growth, which grew out of the three major issues, were expected to prove enlightening with regard to all of the concerns identified above. Conversely, activities focused on the more specific considerations were expected to, and in fact did, improve the understanding of Project concerns as a whole. Time limitations and the research priorities dictated by local needs and by the flow of Project-related analysis have concentrated attention on work related more closely to some of these objectives than to others. Nonetheless, all of the considerations have played a role in our planning and thinking.

The Cornell University Libraries' efforts at formal, long-range planning have in the past met with only mixed success.[5] A rather elaborate exercise in 1973 combined an attempt to create an internal planning structure with the actual drafting of plans. In contrast, the overall thrust of the present effort centers on developing planning tools and on conceptualizing a planning methodology for the collections and for directly related library operations. The expected results should both resolve some specific problems and substantially increase the library's ability to evaluate its current operations, make projections for the future, and react to ceaseless shifts in such exogenous factors as inflation and publishing output.

We should emphasize at the outset that the twin goals of theory-building and practical planning have, in various cases, led us to both seek and institute changes in the very system under study. Such interventions clearly affect the methodological purity of our endeavor, but local pressures and practical priorities make such tampering with the subject--which in any event is already in a constant state of flux--appear both possible and preferable to any other course.

Planning is an ongoing experience. Library planning occurred before the start of the Project, has continued during the Project, and will take place afterwards. One of our goals has been to institutionalize a more sophisticated approach to collection-related planning, so that future results will be more predictable and future objectives more attainable.

An overall collection development methodology and specific reports illustrating particular problem-solving and planning efforts will form part of the documentation generated through this project. More important, however, will be the cumulative experience of the Library staff, University and Library administration, and the Library Board with the variety of planning tools which is being developed. Likewise, the use of advanced collection analysis techniques at Cornell is intensifying as the Project goes on. Better ways to collect information are already influencing decision-making. Some of these methods will carry a long-term impact.

To repeat, the emphasis must be on the process rather than on the immediate product. Periodic evaluation of progress after the Project concludes will provide the ultimate indicator of its success.

Methodology

The methodology which we are developing involves two linked yet distinct approaches. In the first place, the planning process as a whole must be understood in terms of its phases and components. The analysis of collection development, then, provides the information to be applied in this specific planning effort. For our purposes, an appropriate collection development model can only be generated in the light of the general planning process.

Standard planning methodology requires consideration of mission and policy statements, descriptions of the present state of affairs, a review of relative strengths and weaknesses, the consideration of environmental influences and trends, goalsetting, and the design of strategies to reach established goals. A basic task of the Project has been to define and describe the elements which comprise each of these planning dimensions. In the following paragraphs we will briefly describe some of the most important Project concerns as well as some background assumptions and definitions. Subsequent sections will expand the discussion of specific data elements and series.

The Cornell University Libraries' (CUL) mission statement, as articulated in the AMA planning effort of 1973, provides the kind of general statement of goals required in the planning process:

> To provide bibliographical, physical, and intellectual access to recorded knowledge and information consistent with the present and anticipated teaching and research responsibilities and social concerns of Cornell University.[6]

The formulation of satisfactory policy statements is far less straightforward given the complex and varied nature of the Libraries. A guiding assumption of the current project is that generalizations tend to be neither reliable nor helpful without a detailed knowledge of the particulars on which they are based. Assuming that we can aggregate whenever we wish, our first efforts have focused on designing a framework which fits the specific units under consideration.

We have therefore conceived of the University Libraries' total resources of books, serials, and all other materials as comprising a set of collections. Our preliminary working definition, based on this assumption, is that a collection is a group of materials with distinct and definable common characteristics. These common characteristics can include physical format (manuscripts or phonodiscs); subject (philosophy or physics); user groups (undergraduates or postdoctoral research fellows); language; and geographic origin or connection. The range of characteristics is large, and inconsistencies and overlaps can create severe practical difficulties in attempts to actually define collections.

In practice, then, we have conceptualized the library system as a group of distinct collections, and we plan to devise a separate policy and planning document for each of those selected to test our methodology and model. The obvious differences between the earth science and music collections at Cornell (or anywhere else) can serve as an example. Each is an aggregate of smaller collections; each shows its own history, composition of materials, use patterns, developmental characteristics, and management problems. Our methodology and model can be applied at any level of aggregation. As required, we could thus analyze our collections relating to hydrometeorology, to atmospheric sciences, or to the earth sciences as a whole.

Implicit in the preceding discussion is the definition of a library as a group of collections in one location. "One location" as here employed implies a single building, but parts of one collection can be housed in various libraries.

Insofar as the Project seeks to specify aspects of collection development, our focus on collections as the base for research may seem obvious. However, convincing rationales can also be adduced for concentrating on the academic

program, publishing output, user demand, or some other factor as the primary force in library collection development. Our working hypothesis is that virtually all activity within a library is based on the composition, development, and management of its collections. Outside influences exist and are significant, and a comprehensive model for collection development and management must recognize and evaluate them. However, they are not predominant. The first thrust in this effort of data collection and planning must focus on the library itself.

Thus far we have considered two components of the planning processes--the overall mission statement and specific policy statements. Using the need for policy statements as a platform, we have elaborated the reasons for concentrating on specific collections and for looking at these collections before we turn to environmental factors. Other requirements for valid planning include a broad description of current conditions--a description which must include both an assessment of a collection's relative strengths and weaknesses and a review of environmental influences. Much of the Project's activity has centered on collecting, generating, and collating the data pertinent to this purpose. We have striven for the highest possible degree of quantification, while recognizing that some considerations--among them some of the most important--cannot be so measured.

While one objective of this research effort is the development of planning and evaluation tools which will adequately recognize quality, a more immediate need concerns quantitative measurements which will allow comparison between collections, both within the same library system and across institutions. In the following paragraphs, we will expand upon some of the assumptions and hypotheses which have underlain our search for valid, comparable, quantitative data.

One obvious trap in bibliographical work is the temptation to redesign the classification of knowledge. Definitional systems abound: library schemes include the systems designed by Dewey and the Library of Congress; the government analyzes educational programs through the HEGIS taxonomy; the departmental structures and major fields of many academic institutions imply a certain division of knowledge. Insofar as Cornell's library collections are organized in accord with the Library of Congress classification system, we decided to retain this as our common language wherever possible. This decision notwithstanding, we hope to remain flexible in cases where an alternative would prove more beneficial.

A serious effort was made in the first few months to actually delineate Cornell's grid of collections, but this was abandoned. Decision making in the Cornell University Libraries is not a centralized effort, and many individuals are involved. Moreover, only the selectors and bibliographers and curators enjoy that familiarity with the specific collections which can allow delimitations to be both accurate and efficient. We will proceed by urging each responsible person to designate the level of depth in the definition and division of collections which appears advisable in the light of his or her experience and needs.

In order for the planning process to be effective, all CUL collections must be considered. However, the scope of the present Project does not anticipate an individual report on every identifiable collection but rather focuses on the process through which comprehensive collection analysis and planning can take place. In the past, the emphasis has too often been limited to a specific subject, physical format, or library. Our goal of meaningful projections and predictions for the Libraries as a whole assumed an initial disaggregation to component collections. Obviously, this also requires the subsequent reassembly of all these pieces to restore the whole.

Special Project exercises have of necessity focused on isolated collections and, in some cases, on isolated aspects of collections. Nonetheless, our intent is to gradually construct a series of analyses, projections, and plans, which can be aggregated for the system as a whole. Systemwide data have also been collected and analyzed on their own terms, in some cases because satisfactory alternatives were not available, and in others because such data provide the most accessible indication of very general trends and conditions.

Subsequent sections will deal with our particular efforts at collecting data. The goals established for Project activities have, for the most part, arisen out of the background concerns and specific objectives listed earlier in this chapter. For the most part, and in the short term, they involve refinement of operations to ensure that adequate data will be collected for future analysis and planning as well as efforts to compensate for the inconsistencies already discovered. One example of this sequence is a report on Cornell's earth sciences collection. As this earth sciences report reveals, the strategy for implementing change became apparent through a careful description of the problem. In other Project-related endeavors, such strategies will undoubtedly prove more complex.

In this section, we have attempted to relate specific components of Project activity to planning methodology, thereby linking the general and theoretical objectives suggested earlier in this chapter with tangible planning processes. To recapitulate, planning requires an understanding of goals, an analysis of current reality relative to those goals, determination of short-term objectives which will move the current reality closer to the ultimate goals, and implementation of strategies to achieve the interim objectives. The Project will strive to elaborate this broad planning model as it relates to library collection development and maintenance.

III. DATA ACQUISITION AND ANALYSIS

This section, and those following, describe specific efforts to collect data relevant to Project objectives. Each of the eight headings in these three sections will explain the rationale for data collection and summarize both our efforts and the obstacles we have encountered.

History of the Cornell Collections

The axiom that one must understand the past to understand the present is quite generally accepted. It is, however, far from obvious that this dictum should apply to library operations, even though many might argue that the weight of the past is librarianship's greatest impediment. Neither is it immediately apparent that a historical survey is an appropriate element in Project activities.

We have asserted that libraries are composed of specific collections and that a library can only be understood as the holding agent for these collections. The particular nature of these collections and of the decisions which have affected them over the years make a historical perspective particularly enlightening. For example, a prime consideration in allocation decisions is a given collection's historic strength. In many cases, the collection itself provides the primary stimulus for its cultivation and perpetuation. Historical analysis is essential to fully appreciate the considerations which currently bear, and will continue to bear, on a collection's growth.

Historical analysis also improves our understanding of some phenomena which might otherwise appear anomalous. For instance, some libraries may have been created to support undergraduate instruction. Subsequent complaints when these units fail to satisfy research needs can be better evaluated in relation to the original goals. In other cases, libraries have been established without specific objectives or purposes. The unfocused collections which may result are easily understood in the light of this past. Historical analysis can indicate what we sought in the past and thereby illuminate what we have in the present.

In comparison to its peers in the United States, the Cornell University Libraries' history has not been well researched and publicized. We do have the excellent accounts prepared by Rita Guerlac and by Giles F. Shepherd, each of which derives in considerable degree from Morris Bishop's classic A History of Cornell.[7]

For a better understanding of existing collections, though, more historical work is essential. Cornell's Humanities Librarian, G. Marvin Tatum, Jr., has been commissioned to prepare a chronology of major events affecting the collections. This survey will summarize the acquisition of major collections, the formation and mergers of collections, past development plans and collection reviews, and the identification of individuals who have influenced the course of specific collections. We hope that the history of the Libraries and of all their collections will eventually be written and that our current efforts will stimulate such an endeavor.

Statistical Description of Existing Collections

We have already suggested that planning for collection development in our collection-based model demands a description and analysis of the existing collections. Since this planning will result in projections and predictions phrased in terms of costs, acquisition levels, and space requirements, the pertinent statistics should elucidate each of these considerations. This concentration on the quantitative aspects of collection development and growth is not intended to deny the crucial, and perhaps preeminent, role of qualitative evaluation. Indeed, subsequent sections deal with preliminary efforts to confront the question of quality. In the absence of any common language or conceptual framework for qualitative assessments, though, and given the pragmatic motives behind this study, quantitative data have received our first and most sustained attention.

We have already referred to the widespread lack of sophisticated statistical reporting systems in academic libraries. At Cornell, statistical deficiencies have been due in part to the University's decentralized nature and fragmented history and in part to a failure to define systemwide statistical needs. Most available figures, as a consequence, were only collected to monitor the workload and the work flow of individual departments. Several improvements have been made, notably through efforts to standardize statistical reporting in all libraries. Even so, decentralized definitions and procedures have produced widespread discrepancies of detail, which have significantly slowed our efforts to gather data.

Consequently, both the extent and the reliability of previous statistical data leave much to be desired. The reconstruction of a uniform statistical sequence incorporating the past seven years and, where feasible, extending back to the 1961 opening of Olin Library occupied much of the time and attention of

Project Assistant Beverly Hirsekorn. Information was culled from the Director's annual reports, departmental annual reports, accounting files, records of the Assistant Director for the Development of Collections, and individual librarians. In addition, a number of counts were taken specifically for this project.

In order to develop a realistic picture of Cornell's library collections, statistical data have been grouped under the following categories:

A. Expenditures

B. Shelflist count

C. Volume count

D. Space occupied

In none of these categories are data particularly meaningful when interpreted separately or for their absolute value. The four sets of data do, however, provide the ingredients for a model which will both indicate trends and serve as a basis for comparison and projection. In almost all cases we have used Library of Congress classification segments to define the units of measurement. Where such divisions proved unworkable, the individual library was taken as the basic analytical unit.

A. Expenditures

Until 1978, there were five major ordering units for books and journals on campus, each with its own distinct accounting practices. These were Olin Library for many of the endowed units, Mann Library, the Law Library, the Industrial and Labor Relations Library, and the Veterinary Library. To cloud the picture even more, in Olin Library itself there are at least five units that completely process acquisitions orders.

Since 1971, we have attempted to maintain identical expenditure statistics for each of the libraries as well as for a number of individual collections enjoying independent budgets. It has proved impossible to distinguish expenditure levels for all collections, given the frequently broad subject range covered by one acquisitions fund. We have, nonetheless, reconstructed aggregate expenditures for each library and for some collections in terms of serials, series on standing order, and monographs. Controls for binding expenditures remain unsatisfactory, and these costs are frequently mixed with monograph outlays in accounting reports. Nonetheless, this skeletal view of Cornell library expenditures has allowed us to plot changes over the short and long terms and to index shifts in level and emphasis.

Table 1

Comparative Expenditure Report and Index
1971/72 to 1977/78 (Extract)

Library	1971/72 ($)	Index	1973/74 ($)	Index	1976/77 ($)	Index	1977/78 ($)	Index
Olin--General Collections								
Books	330.457	100.0	392,028	118.6	365,131	110.5	370,011	112.0
Series	66,149	100.0	84,859	128.3	94,366	142.7	97,565	147.5
Serials	120,303	100.0	151,846	126.2	118,511	156.7	224,583	186.7
Sub-Total	516,909	100.0	628,733	121.6	648,008	125.4	692,159	133.9
Engineering								
Books	7,872	100.0	11,630	147.7	17,712	225.0	24,907	316.4
Series	2,433	100.0	2,659	109.3	3,820	157.0	6,987	283.5
Serials	49,633	100.0	56,955	114.8	72,640	146.4	82,643	166.5
Sub-Total	59,938	100.0	71,244	118.9	94,172	157.1	114,447	190.9
Albert R. Mann								
Books	78,831	100.0	90,480	114.8	109,896	139.4	116,529	147.8
Series	--	--	--	--	--	--	--	--
Serials	75,547	100.0	118,744	157.2	150,959	199.8	160,618	212.6
Sub-Total	154,378	100.0	209,224	135.5	260,855	169.0	277,247	179.5
TOTAL FOR ALL LIBRARIES	1,480,875	100.0	1,871,786	126.4	2,059,346	139.0	2,336,001	157.7

B. Shelflist Count

Cornell was an early participant in the national shelflist measurement project, initiated in 1973 by the Discussion Group of Chief Collection Development Officers of Large Research Libraries. Although these counts were originally intended to test the utility of a comparative national collection development index, the local applications soon proved even more interesting. The national counts were published in 1973 and 1976 by the University of California Library at Berkeley.[8]

Through Berkeley's LeRoy Ortopan, Cornell gained access to the computer software used to prepare the national counts. William Treat, Manager of Cornell's Automated Systems Control Group, then adjusted these programs to produce printouts for the Five Associated University Libraries, FAUL.[9] For analytical purposes, it was necessary to strive for the narrowest possible breakdown in terms of Library of Congress classification segment and library unit. Cornell maintains separate shelflists for many of its libraries, and data were printed for each one. Printouts are now available for the counts from 1975 and 1977, though the 1973 count is available only in manuscript.

There are many complexities inherent in using shelflist measurements for collection analysis. For example, the number of shelflist cards does not directly

equate with the number of titles since some bibliographic descriptions occupy several catalog cards. Further sampling should clarify the extent of such discrepancies and whether they vary between discrete segments of the LC classification. Even if the correspondence between shelflist count and number of titles is not exact, though, these figures are indicative of trends in collection growth by title. For practical reasons, we will equate the two in this report. Adjustments can be made at any time in the future. Despite the difficulties, shelflist measurements can provide a powerful analytical tool.

The broad breakdown of the Library of Congress classification developed by Berkeley for the national shelflist count was employed in all cases at Cornell. Nonetheless, this division quickly proved deficient for analyses of Cornell's areas of particular interest and strength. It also became necessary to identify and exclude the holdings of the special collections located in the Olin Library. These collections, which have maintained their own records, would otherwise have been double-counted in the overall Olin totals.

Remeasurements, completed in the fall of 1977, allowed us to adjust earlier figures to identify Olin's general collections as a separate physical and conceptual entity. In a related enterprise, subject specialists and foreign area librarians suggested far more detailed statements of the LC classification segments representative of history, literature, and area programs. In the classification dealing with Asia, for instance, Cornell's considerable strength demanded a close analysis of our collections and a correspondingly detailed LC class breakdown. The shelflists were remeasured for many of these areas. Similar analyses will probably become necessary for other collections as the Project develops.

With full shelflist data in hand, arranged by library and by class, aggregations and correlations can be constructed at will to demonstrate collection strength and distribution by specific classification segments and between campus libraries.

Table 2

Shelflist Measurement (Extract): BF 1-1000, Psychology
for 1973, 1975, and 1977

Library	1973	Index Base	1975	Index	1977	Index
Olin	7,942	100	8,485	106	9,405	118
Mann	2,888		3,013	104	3,405	118
Wason/Echols	323		342	106	361	112
Uris	1,311		1,471	112	1,710	130
Law	114		99	87	106	93
I&LR	64		703	109	790	122
BPA	285		266	93	285	100
Fine Arts	11		18	164	24	218
Engineering	38		38	100	30	79
Music	4		6	150	6	150
Veterinary	19		27	142	23	121
Physical Sciences	5		4	80	4	80
Mathematics	4		5	125	5	125
Hotel	84		91	108	95	113
Africana	--		--	--	13	--
Total	13,674		14,568	107	16,262	119
Total A--Z	1,802,061		1,978,431	110	2,190,035	122

C. Volume Count

Library holdings have traditionally been reported in terms of the number of physical items in a collection, and the number of volumes--"books"--usually receives pride of place. By examining annual reports and other archival sources, we have constructed growth tables for the Libraries as a whole as well as for each individual library. Tables are also available for the various microform collections, maps, archives, sound recordings, etc.

An aggregate tabulation of the volume totals was used to generate the following table of growth by library:

Table 3

Percentage Distribution of Growth, in Volumes, for Each Library as a Share of Total System Growth 1961/62 to 1977/78

Year	BPA	Eng'g	Fine Arts	Law	Hotel	I&LR	Mann	Math	Music	Olin	Phys. Sci.	Uris	Vet.	Wason/ Echols	Afric.	Total
1961/62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	↑
1962/63	4.2	3.7	2.4	4.2	.3	3.0	9.0	.6	2.9	51.7	2.8	2.8	1.3	11.1	--	|
1963/64	3.7	3.5	2.4	5.5	.4	3.0	6.8	.7	2.4	52.8	1.8	3.9	1.3	11.8	--	|
1964/65	3.6	4.4	2.4	7.4	.4	2.6	8.0	.6	2.4	48.5	2.4	3.5	1.0	12.8	--	|
1965/66	4.2	5.5	2.2	6.4	.3	3.2	7.1	.6	1.8	48.4	2.9	4.7	1.5	11.2	--	|
1966/67	3.1	4.1	2.5	6.1	.2	2.1	21.5*	.5	1.6	40.8	1.7	3.7	1.1	11.0	--	|
1967/68	3.6	4.5	3.8	7.9	.3	2.0	9.3	1.0	2.7	44.0	2.0	3.8	1.2	13.9	--	|
1968/69	4.0	3.2	-- *	7.4	.9	3.5	9.7	.8	2.9	53.5	1.9	2.6	1.0	8.6	-	100%
1969/70	4.5	4.7	4.3	8.5	.4	3.1	8.6	.7	2.2	45.6	2.1	2.7	1.3	11.3	-	|
1970/71	3.6	4.3	2.9	8.4	.3	3.0	8.8	.6	1.3	49.7	2.1	3.3	1.1	10.6	--	|
1971/72	4.0	5.4	3.9	8.7	.3	4.0	11.6	.5	2.3	41.4	2.7	3.7	1.5	10.0	-	|
1972/73	3.0	4.5	3.6	6.2	.5	2.7	9.1	.7	1.3	49.6	2.3	3.2	1.5	11.8	--	|
1973/74	3.1	4.5	3.9	9.5	.5	3.2	9.0	.7	1.6	44.7	2.1	3.1	2.0	10.8	1.3	|
1974/75	2.9	4.1	3.1	7.7	.4	2.0	10.7	.7	1.7	46.0	2.2	3.1	1.4	13.3	.3	|
1975/76	3.0	4.1	2.6	8.6	.4	2.1	9.7	.7	2.2	48.0	1.6	2.7	1.2	13.0	.1	|
1976/77	2.9	4.0	2.4	9.3	.4	2.5	13.7	.7	2.2	46.0	2.1	2.5	1.3	9.9	.1	|
1977/78	3.2	6.4	2.6	8.2	.7	3.5	10.5	1.2	2.3	40.4	2.9	2.3	1.2	13.6	.1	↓

* results from the consolidation of biological sciences collections

While this table appears straightforward and is certainly indicative of collection size, data interpretation is complicated by Cornell's gradual shift during the 1960s from a bibliographical count to a physical count. Cumulative figures were not adjusted to reflect the changing basis for counting, so that a reliable base year was never established.

In June 1977, a complete volume count of all the campus libraries was conducted under the supervision of the Olin Library's Circulation Librarian, Robert Moore.[10] For practical reasons, we limited ourselves to a count by the first two letters of the LC classification. This count has provided figures, by library and by broad classification segment, which enable us to declare our holdings in certain broad subject fields:

Table 4

1977 Physical Count (Extract):
Class "H," Social Sciences

Library	Volumes
Olin	185,575
Wason/Echols	39,641
Mann	86,025
BPA	76,244
I&LR	75,511
Engineering	14,452
Law	11,004
Uris	14,570
Veterinary	535
Physical Sciences	141
Mathematics	321
Africana	670

Data from the physical count and from our shelflist measurements provide two separate indicators of the size and composition of the unique set of collections which comprises the Cornell University Libraries. By correlating the two, we can derive volume-to-title ratios for each classification segment. Previous library studies have offered only overall volume-title ratios. Downs, for instance, mentions 1.78 volumes per title in academic libraries.[11] Clapp and Jordan mention monograph ratios of 1:1.37 for the National Union Catalog, and 1:1.15 for the Lamont Library catalog.[12] Although precise figures for Cornell may be distorted by the previously mentioned discrepancy between the shelflist count and the number of titles per class, the methodology for determining volume-title ratios nonetheless merits illustration:

Table 5

Volume-Title Ratios for Cornell Library Units

Library	Number of Titles	Number of Volumes	Volumes Per Title
Olin	1,217,351	1,459,543	1.20
Wason/Echols	199,981	335,150	1.70
Mann	221,484	442,739	2.00
Uris	84,711	112,314	1.30
Fine Arts	59,477	68,074	1.20
Music	52,349	51,533	0.98
BPA	58,939	112,217	1.90
I&LR	57,915	98,504	1.70
Law	106,978	168,581	1.60
Hotel	10,854	16,088	1.50
Africana	2,870	4,656	1.60
Veterinary	27,325	35,289	1.30
Physical Sciences	24,039	63,069	2.60
Engineering	51,988	224,735	4.30
Mathematics	13,768	22,464	1.60
Total	2,190,028	3,216,056	1.50

These variations in volumes per title demonstrate that an overall average is useless for actual planning purposes. The utility of even greater specificity is shown by the following example:

Table 6

Volume-Title Ratios for Selected Libraries and LC Classification Segments

Library	LC Class	Number of Titles	Number of Volumes	Volumes per Title
Olin	A	30,741	67,949	2.2
	Z	33,761	78,651	2.3
Eng.	Q	8,809	16,991	1.9
	T	34,548	180,078	5.2

D. Physical Measurements

This fourth factor is particularly crucial for space planning. Following our working principle of reducing aggregate figures to the collection level or, failing that, to the smallest possible component (generally a single library), we

have sought to detail the space in linear feet occupied by each Library of Congress classification segment in each library.

Previous space inventories at Cornell considered only the total amount of shelf space in each library. With substantial help from Professor of Environmental Engineering Walter Lynn and his students, and from Assistant Engineering Librarian John Saylor, we have measured the total number of shelves occupied by each of the main LC classes (as defined by the first two letters) in Olin Library, the Wason and Echols Collections, Mann Library, and the Engineering Library. Sampling procedures have allowed us to derive occupancy rates per shelf for each of these classes. We can thus compute the actual shelf space occupied by each of these classes. A correlation with the physical count's tally of volumes per class will, for the first time, provide a differentiated average volume size for each library.

We expect to continue gathering data in each of the four categories mentioned in this section. For some subject fields, our information is already complete. For many other collections, data gathering will be part of the extended evaluation and planning process which the Project has initiated. Insofar as possible, we are continuing to collect data on a current basis. The specifics of these ongoing efforts will be described under the next heading.

Description and Analysis of Current (1977/78) Acquisitions

The preceding section describes tabulations and statistics which afford a panoramic view of the Cornell University Libraries. Each of the data series is susceptible to a greater or lesser degree of additional elaboration. Nonetheless, the analysis of an existing collection--even when based on figures from several points in time--is essentially static and fails to elucidate the everyday dynamic of collection growth. Moreover, certain specific data elements have not been available in the past, so that special efforts were essential to generate representative figures. Statistics for current acquisitions will encourage the kind of time-specific analyses which can carry us toward the fundamentally dynamic processes of planning and decision-making.

Current acquisitions data will be described in accord with the same four statistical dimensions suggested in the preceding section: expenditures; shelf-list count; volume count; and physical measurement.

Expenditure figures continue to be available through the accounting structure previously described. With the Project-derived decentralization of some selection responsibilities, Cornell's fund structure has moved toward a closer correlation between acquisitions funds and specific collections.

In the past, several of the librarians responsible for geographic area collections have utilized extra catalog cards for collection analysis and to monitor current acquisitions. For the purpose of this project, an extra card was produced for all new cataloging from 1 August 1977 to 31 July 1978. A separate shelflist, the only one to incorporate every library and collection within a single file, was thus created. This unified shelflist has enabled us to measure one year's growth in titles in accord with the LC classification breakdown mentioned above.

Table 7

Shelflist Count and 1977/78 Additions in Class "HC,"
Economic History and Conditions: National Production, by Library Unit

Library	1977 Shelflist	1977/78 Additions
Olin	22,648	1,053
Engineering	114	11
Mann	3,572	106
I&LR	3,705	191
Law	950	50
BPA	6,365	157
Undergraduate	1,501	50
Wason/Echols	10,354	646
Fine Arts	137	16
Africana	179	35
Music	0	0
Mathematics	0	0
Physical Sciences	11	0
Hotel	76	4
Veterinary	10	0

This independent file gives us a much more accurate and detailed record of additions to the collections than that available through the consecutive shelflist measurements. Nonetheless, sample tests have substantiated that figures for the distribution of additions by classification segment are consistent between the two methods.

The specific measurements for each class are now being converted to machine-readable format, so that comparisons between years as well as between LC classes and libraries will become possible. More or less concurrently with the Cornell Project, SUNY-Central Administration, under the direction of Glyn Evans, developed software for the statistical analysis of OCLC tapes under a research grant from the U.S. Office of Education.[13] These programs will be applied to Cornell's OCLC archival tapes to quantify and describe the overlap of titles among the various campus libraries. While we are aware of several areas of overlapping interests, we have never been able to develop exact information on the impact of such overlap at the selection level. Depending on costs, the statistical analysis of OCLC tapes might prove an extremely useful tool for monitoring collection development.

When the Project began, analysis of Cornell's serials and series was virtually impossible. The idiosyncracies of branch library procedures, the lack of common definitions, and divergent patterns of record-keeping, all contributed to the problem. Two steps were taken to remedy these shortcomings as applied to current acquisitions, thereby to lay the foundations for future analysis.

As an interim arrangement, assistants clipped each of the approximately 40,000 entries in Serials Currently Received and its supplements and in Cornell's list of analyzed monographic series. These compilations subsume the vast majority of current serials and series acquisitions. A manual processing system was then developed to analyze these entries by library and by broad LC classification segment. Measures of the extent of duplication, as well as title distributions by library and by classification segment, are now possible.

This information, which was never available before, is susceptible to further analysis with the inclusion of actual cost figures. The utility of this list for collection development purposes, and also for the library system as a whole, is readily apparent. The Libraries' Manager of Automated Systems, William Treat, has devised a program to key needed data and thereby automate and upgrade the materials analyzed manually in our first round. Project funds will supplement Cornell funds in creating and sustaining our data base of serials currently received, which will in turn enable constant monitoring and evaluation of these critical collection segments. Our vastly expanded capacity for serials data management is one of the most positive practical results of Project activity.

Staffing shortages have prevented the maintenance of physical count data by library and class in most libraries on campus. Olin's Circulation Department, however, is providing quarterly reports, with annual cumulations, which allow us to monitor the physical growth rate in each classification segment. These figures can also be correlated with our current shelflist data to identify any changes in volume-title ratios.

Guillarmo Rodríguez and Surong Bulakul, who conducted a research study under the direction of Professor Walter Lynn, assisted in developing a sampling procedure for space measurements of serial and monograph holdings in Olin Library, the Wason and Echols Collections, the Engineering Library, and Mann Library.[14] These ratios, in conjunction with shelflist measurements and physical counts, should enable us to assess and predict the growth of our holdings in various specific categories. Periodic updates will reveal any changes in these ratios.

IV. ENVIRONMENTAL FACTORS

The central concern of libraries--their collections--have been subjected to direct scrutiny through the methodology and approaches described in the previous sections. A balanced view of the factors and forces influencing collection development must also incorporate elements which might be considered environmental: these are factors over which neither selection nor library has direct control, but they shape and in many respects virtually define the possibilities of collection growth and development.

Current Trends in Literature Output

One of the most critical and obvious environmental factors affecting libraries and collection development efforts is the number and cost of new publications. Unfortunately, data series on cost and output are almost impossible to locate, and available information tends to be both fragmentary and not fully comparable between cases. Data are needed not only by subject, to correlate with library collections, but also in terms of categories like primary versus secondary sources, or output by publishing source. As microforms become ever more prominent, detailed information is also needed to assess possible levels of substitution between this publishing mode and the traditional print format.

The Project's considerable efforts to tabulate cost and output data for current publishing have proved largely fruitless, except as an indicator of the complexity of the task and a measure of the work to be done. Other work has touched on the problem without resolving it.[15] A major research effort is essential if divergent definitions of subjects and incompatible statistical bases are to be brought together in an understandable way. Our efforts to monitor internal acquisitions costs, on the other hand, will at the very least improve our feel for general shifts and trends in publishing. Such data, even as it documents the performance of specific collections, also provides an indicator of general market conditions.

Academic and Research Activities at Cornell

As the Cornell University Libraries' mission statement makes clear, the Libraries have defined their primary goal in terms of satisfying "present and

anticipated teaching and research responsibilities and social concerns." These objectives imply a group, or groups, of users; we must further examine these users to adequately understand collection needs and to formulate our future goals vis-à-vis collection development. Users are another element external to the library and its collections, though they clearly play a major role in shaping both library and collections.

One of the most significant yet inadequately explored aspects of large academic libraries is the relationship between library collections and the immediate academic environment. Most formulae which have been devised to ensure "adequate" collections or acquisition levels attempt some sort of quantification of academic activities. Clapp and Jordan did this for college libraries, and the recent grant to SUNY-Central Administration has supported an effort to quantify relationships between collection growth and student credit hours by subject area.[16]

Our working hypothesis is that a historically identifiable relationship exists between graduate and research programs and library collecting activity. Long-term academic interest, as reflected in a departmental tradition or in the extended tenure of some influential individual, has shaped the Libraries' broad or "macro" selection decisions, which have in turn set the framework for most individual or "micro" decisions.

Describing the long-term interest of Cornell's academic departments has proved a formidable task. Data are often incompatible between colleges, and the division of knowledge into subject fields does not necessarily correspond to the division of the University into departments. Ideally, nonetheless, it should be possible to supplement descriptions indicative of total interest in particular fields with overlapping maps depicting the location of collections, of academic programs, and of students.

Project data on academic activity were collected from Cornell's Office of Institutional Information, various Registrar's reports, and the Office of Sponsored Programs. This information has been grouped by academic department, though some departments have changed over the past ten years, and some data remain incomplete. Efforts to describe the undergraduate population failed--available listings only indicate field of interest, which does not necessarily correlate to departments. Furthermore, the information varies substantially between colleges.

Four sets of data have finally been gathered as indicative of academic activity. The listing of professors recognizes only full-time appointments and excludes such categories as research associates, extension associates, and instructors. Graduate enrollment comprises the second element, and the number of advanced degrees at both the masters and doctoral levels is the third. The last data category is the level of sponsored research expenditure and reflects a type of academic activity which has not always been supported by library allocations.

Correlations between levels of academic activity and the growth of library collections should facilitate our understanding of the extent to which specific programs have gained or lost ground in terms of the library resources at their disposal. By signaling anomalies, more rational allocation and collection development projects should become possible, and these should enable in turn more adequate decisions.

Table 8

Selected Academic Activity Indicators for
Classics, Computer Science, and Ecology and Evolutionary Biology
1965/66 to 1977/78

Field/Year	Full, Asst. & Assoc. Professors	Graduate Enrollment	Master Degrees	Doctorate Degrees	Research Expenditures ($)
Classics					
1965/66	--	10	3	3	11,321
1966/67	--	12	1	1	9,799
1967/68	--	11	4	1	--
1968/69	--	14	--	3	--
1969/70	--	11	1	1	--
1970/71	11	8	2	2	3,484
1971/72	9	10	3	3	6,789
1972/73	11	11	2	3	--
1973/74	10	13	2	3	--
1974/75	10	10	--	--	--
1975/76	10	8	3	2	--
1976/77	11	12	3	--	13,675
1977/78	13	12	4	--	17,523
Computer Science					
1965/66	4	2	--	--	12,756
1966/67	6	20	1	1	154,616
1967/68	6	37	3	--	188,337
1968/69	8	41	10	--	211,263
1969/70	10	41	18	5	262,884
1970/71	12	47	5	7	370,751
1971/72	14	53	12	6	229,613
1972/73	14	58	13	8	410,857
1973/74	15	56	19	6	208,406
1974/75	15	59	7	7	257,652
1975/76	15	49	16	6	272,209
1976/77	15	47	9	12	246,237
1977/78	15	43	8	5	495,633
Ecology & Evolutionary Biology, Ag/Arts & Sci.*					
1965/66	--	23	6	1	104,169
1966/67	--	39	10	4	--
1967/68	--	57	11	4	63,947
1968/69	--	56	13	9	64,963
1969/70	--	73	4	8	292,897
1970/71	14	64	3	10	221,025
1971/72	13	68	1	5	277,097
1972/73	14	63	4	8	158,653
1973/74	13	71	6	3	182,567
1974/75	13	60	6	12	256,493
1975/76	14	60	6	14	325,225
1976/77	14	65	1	13	330,799
1977/78	14	56	5	10	301,054

* From 1972/72 on--Field spread in 2 colleges

V. DESCRIPTION, ANALYSIS, AND EVALUATION OF THE CORNELL COLLECTIONS

This critical phase of Project activities can only be completed after the data described in preceding sections have been fully compiled for each collection. The earth sciences study to be included in the Project's final report incorporates the sort of prose description envisaged as part of this project. When bolstered with fuller historical and statistical background and a complete review of exogenous forces, a comprehensive picture should emerge which lends itself to the formulation of planning objectives and the development of strategies to realize them.

An additional goal of this phase is the preparation of guides to the individual collections at Cornell. In some cases, such guides may partially substitute for existing modes of bibliographic access to particular sets of material.

Once collections have been described and publishing output and user composition and needs have been established, evaluation--the next major component of the planning process--can be attempted. Evaluations will assess the collections in terms of the objectives previously developed, and the comparison process will give rise to predictions and goals. To the extent that reliable trends in areas like publishing output and costs can be established, medium- to long-range statements of aspirations and expenses should become possible. Clearly, this phase of description, analysis, and evaluation lies at the heart of Project-related activity.

Use of the Cornell Collections

Tallying the indicators of academic activity suggested in section four should improve our understanding of Cornell's user community. A formal user study can supplement this appreciation of our patrons and their needs and also provide insights into user perceptions of collection adequacy. Our ability to evaluate collection quality will thereby be enhanced.

Measurements of library use--too often equated with assessments of information utilization--have traditionally focused on circulation statistics or on other after-the-fact enumerations of measurable use. The methodological pitfalls in overgeneralizing from circulation statistics cannot be overstressed. On the other hand, circulation analyses have provided the Project with much-needed

models for collection management. Decisions on added copies and, until recently, procedures for replacements were handled entirely within the Circulation Department, largely on the basis of use histories.

The Cornell community includes active library users along with others who rarely consult the collections. A major sampling effort has been mounted under Project auspices to assess real user needs as well as user perceptions of library and collection adequacy. Questionnaires will be distributed to a substantial share of Cornell's graduate students, to all faculty members, and to all the professional librarians. Once analyzed, these inquiries should allow us to gauge user perceptions of the adequacy of collections and services as they relate to specific disciplines and libraries. These assessments will, once again, help us plot planning goals and strategies.

Alternatives to the Cornell Collections

It is by now taken for granted that no single library can realistically aspire to comprehensive collections in all areas of interest. Resource sharing and cooperative efforts are essential, and readily available outside resources can effectively supplement in-house holdings. To the extent that such external resources are available to a collection or library, any system's planning priorities can be adjusted and refined.

Despite the possibilities of pooled resources, however, the concepts behind cooperative collection development and a vocabulary for analyzing it remain undeveloped. Such considerations as the degree of geographic isolation must enter into calculations, as must the extent and the intensity of local demand. Resource sharing has great potential, but detailed analysis is required both to identify resource sharing possibilities within each collection and to develop the conceptual framework for cooperative efforts.

VI. THE DECISION PROCESS

So far, we have looked at such factors as collections, users, and publishing output as grist for some mysterious planning and decision-making mill. The analysis of all these elements is absolutely essential for planning purposes. Equally so, however, is an examination of the mechanisms for making decisions. If tradition and politics mandate a decision-making structure resistant to scrutiny or change, the most sophisticated analysis of collections and library needs will come to naught.

Decision making as it relates to collection development occurs on several levels. At one extreme, the individual selector--whether librarian, faculty member, or someone else--makes specific item-by-item (or occasionally block) decisions within a particular field. At the other extreme, the University administration assigns an overall acquisitions sum to the Library system. Between these extremes of the resource allocation process, library administrators divide the acquisitions budget between specific funds, which roughly correspond to specific collections. We will consider only the intra-library decision and allocation processes in this study. To do so, we will focus in turn on selection models, collection development profiles, and allocation priorities.

Selection Decision-Making Models

Selection can involve a wide number and range of actors. At Cornell, some collections are managed by a bibliographer who is personally responsible for selection decisions. Input from researchers and faculty members is eagerly sought and almost uniformly respected, but librarians make the decisions. In other collections, faculty make the selection decisions. A third model, no longer applicable at Cornell but once popular in many academic libraries, relegated book selection to departmental committees. The philosophical position of the Cornell University Libraries is perhaps best expressed in the following extract from a 1966 acquisition policy statement:

> Selection of materials to be acquired is the joint responsibility of the University faculty and the Library staff working as an effective and coordinated team. Interested and active faculty participation in checking catalogs, following reviews, and constantly making recommendations for purchase is an

> invaluable aid to intelligent selection, for such participation makes available the expert knowledge of the subject specialist, which the librarian cannot hope to approximate with respect to the entire range and variety of material he must cover. But the ultimate responsibility for the adequacy and quality of the selection, within budgetary limitations, rests with the Library Administration in general and with the Assistant Director for the Development of Collections in particular. The truly professional and responsible acquisitions staff seeks to anticipate faculty and student requirements and undertakes to fill in as best it may the inevitable interstitial subject areas in which faculty interest is at the moment dormant or inactive. ...[17]

Who selects materials constitutes a crucial aspect of the decision process. A second dimension concerns the level at which decisions are made. "Micro" decisions are made on an item-by-item basis and demand a heavy investment of time and energy. "Macro" decisions, by which large blocks of material are acquired through a single determination, fall at a different level. Decisions to acquire all the items in a series, or to establish a blanket order, or to purchase a microform collection reflect this "macro" level.

In some disciplines, "macro" decisions may account for the overwhelming majority of items acquired. Particularly in areas of science and technology, virtually all significant scholarly literature can be obtained through blanket orders with specific publishers. Even in this situation, though, the "micro" decisions necessary to supplement this broad sweep may provide the collection with its character and distinctiveness. On the other hand, fields in the humanities often demand a preponderance of individual, "micro" selections, since the structure of publishing is as inchoate as that of the field itself.[18]

As we see, the environmental factor of publishing patterns affects selection modes as well as collection development possibilities. Distinct library collections manifest significantly different decision-making patterns for selection. The model employed in any collection must be understood if plans and aspirations are to be at all realistic. Our efforts in this respect will in many ways parallel those of the Association of Research Libraries-sponsored "Collection Analysis Projects." These have been carried out at MIT, Arizona State, and Berkeley and are in part directed at fostering heightened consciousness with regard to the internal priorities and decision structures of academic libraries.

Collection Development Profiles

Collection policy statements have already been mentioned as an element in the planning process. Collection development profiles, while very different from policy statements, also serve to clarify selectors' awareness of the goals and visions which, whether hidden or overt, guide decisions. By forcing selectors to define their perceptions and intentions, these profiles encourage ongoing evaluation in terms of specific realities.

The Project adapted collection profile data sheets developed during the University of California at Berkeley's Collection Analysis Project. Susan Livingston, Associate Acquisitions Librarian in Olin Library, directed an exercise in which several bibliographers first defined Library of Congress classification segments relevant to their collections and then completed data sheets for each segment. These questionnaires elicited information in such areas as level of collecting intensity, type of material collected, and languages of acquisitions. In their aggregate, these profiles provide a panoramic view of selection priorities and practice. Since the questionnaires were filled out at the shelflist, at least a rough correspondence is expected between selector impressions and collection realities.

Allocation Decision-Making Profile

Overall fund allocations have been determined by the Library administration albeit with some input from users and selectors. This phase of the Project has, accordingly, attempted to recapitulate the purposes and principles underlying our allocation decisions of the past decade. Only by understanding existing allocation assumptions and procedures can plans be made or alternatives proposed.

Library allocations have been influenced and constrained by the same factors which generated the initial momentum for Cornell's Project proposal: shifts in publishing output, increasing costs, tightening budgets, limited space. Within the library system, several broad factors have demanded special attention.

One element of major impact has been the rise of professional education. The need to sustain serials acquisitions in the sciences has also received high priority. A third pervasive factor has been the historical weight of past allocation patterns; in some instances, prior "macro" decisions concerning areas of collecting interest have been ratified and reinforced precisely because of the earlier determination.

These three elements have affected allocation decisions through the continuing resource commitments they entail. Other allocation decisions more closely reflect an interplay of philosophical predisposition and mechanical efficiency and have resulted in funding and organizational structures which might be altered without necessarily affecting the substance of selection. For instance, certain large-scale acquisition decisions have been enshrined through special accounts with continuing allocations. Some blanket order funds have thus been established, and membership fees for various cooperative efforts and consortia have been charged to independent funds. On another level, but following the same logic, added copies and replacements have received separate funding. Decisions to duplicate or replace a work are based on historical patterns of use and more properly involve collection management than original selection or collection development. The creation of a replacements fund, and the ratification of Circulation Department procedures for applying it, has represented a "macro" decision at the system level. While this structure facilitates an efficient and conceptually congenial replacement process, it is by no means the only mechanism for achieving this end.

Program budgeting, in the sense just described, has been our goal in this gradual shift toward funding visibility and accountability. The program budgeting model has also encouraged efficient decision making by providing independent support for "macro" selection decisions wherever possible. Alternate budgeting models exist, and variant expressions of the current system are easy to imagine. In any event, the allocations model must be clearly understood if plans to improve or refine it are to succeed.

VII. COLLECTION MANAGEMENT

Although inextricably linked in practice, collection development and collection management are susceptible to conceptual isolation and to independent analysis. Collection development refers to the process of determining what to acquire at all levels of the library system. For the purposes of this study, we have particularly focused on the unit collection. Collection management, by contrast, involves the equally critical problem of ensuring that materials are accessible. This implies physical accessibility, achieved by interrelated decisions on such matters as preservation, location, and loan period. It also implies bibliographic accessibility, so that users can identify and communicate their wants.

We will consider three fundamental aspects of the collection management nexus in this section: models for space utilization; specific collection management procedures, including preservation activities; and bibliographic access. Our discussion will only seek to illustrate the problems and possibilities. A detailed research agenda has yet to be developed.

Space Utilization and Storage Models

Models for space planning and utilization loomed large in the original impetus for this project. While the characteristics of space utilization clearly have a great deal to do with collection development levels and projections, the management of space can also be treated as an independent problem. One can, for instance, argue that a certain quantity of shelf space is available in a series of prime and remote locations and predict the rate at which materials must be divided between each to achieve the most efficient loading configuration. Similarly, one can forecast the space needs of each collection in order to more accurately plan for future building efforts.

A first approximation to a space planning model was devised by two graduate students, Guillermo Rodríguez and Surong Bulakul.[19] The methodological aspects of this study are perhaps more interesting than its practical potential, in that they illustrate some of the factors which must be considered in space decisions. The specific data gathered in this exercise have also provided a highly useful census of shelf occupancy rates for different Library of Congress classification segments and for different libraries.

The Cornell University Libraries completed a remote storage facility while the Project was underway. The management problems of designating material to transfer to this facility interacted strongly with the Project's broader focus. In part due to the thrust of the Project and to the overall consciousness of collection management priorities thereby engendered, storage decisions have been characterized by a high degree of competence.

The Earth Sciences Report, now under revision, represents an attempt to crystallize space planning for one discipline. Assistant Engineering Librarian John Saylor devised a breakdown of the earth sciences collection in accord with subdisciplines correlated to LC classification segments, which has proved workable in terms of academic activity, literature, and locational needs. The operational methodology used in preparing his report proceeded from a delineation of the disciplines under consideration to a correlation between LC classification and discipline, and to the ultimate correspondence between both classification and discipline, and academic departments. The practical result was a plan to effectively relocate earth sciences resources in conjunction with nodes of academic interest.

Collection Management and Preservation

Aspects of management and preservation have been implicit in activities related to other headings of this report. Various studies have demonstrated that user expectations and complaints center upon management aspects no less than on the original incorporation of materials within a collection. Our user study should elicit this kind of data for Cornell. Likewise, the analysis of OCLC archival tapes to pinpoint overlap and duplication should enhance our capacity for rational collection management. Preservation is an obvious priority as existing materials crumble away. It entails a range of activities extending from proper care of existing holdings, to microfilming projects, to participation in some special cooperative efforts.

Project activities concerning preservation, in particular, have not been systematic, and have tended rather merely to supplement activities previously initiated. A methodology for controlling purchases of added copies and replacements was developed by Olin's Circulation Librarian, Robert Moore, to more adequately pinpoint and respond to the need for such materials.[20] In another example of management activity, variable loan periods have allowed us to maximize the availability and utility of specific kinds of materials and, coincidentally, to reduce the pressure for added copies.

At the present time, Cornell University Libraries do not have an overall conservation and restoration program. Concern with and awareness of the serious problems of preservation and repair facing research libraries in general and Cornell in particular has been expressed by the Libraries Preservation Committee since its formation in 1972. Formal conservation activities, however, beyond standard library binding procedures, have remained at a relatively low level. Projects to meet specifically perceived needs such as the microfilming of portions of the Southeast Asia collections, the routine oiling of leather bound volumes, the stamping of illustrative plates to discourage pilfering, and applying the process of mylar encapsulation, have all been undertaken on the departmental level.

Cornell has been somewhat buffered by its location from the crisis situations faced by some of its sister institutions in urban areas who are trying to cope with problems resulting from air pollution and intensive use by large populations. Nevertheless, Cornell must continue to seek affordable solutions to the massive problems of acid decay, theft, vandalism and binding deterioration that face virtually every great research collection.

Bibliographic Treatment and Its Relation to Selection and Storage

This is another Project-related concern in which tangible progress has been slight. Librarians sustain an almost reflexive aspiration to full bibliographic description of all library materials, even as they exempt such categories as vertical files and many microform holdings from this exalted goal. Clearly, the utility and success of a library collection depend on adequate bibliographic access to its holdings. Bibliographic access, however, has typically been confused with in-depth cataloging. As card files overflow, actual accessibility may well be reduced rather than enhanced.

In a related aspect, the Annex Library's closed stacks and potential for differently-organized storage space may allow CUL to develop or retain "second-level" collections, for which in-depth access is less crucial. In some cases, such as certain gift collections, the value of materials lies as much in their juxtaposition to one another as in the specific holdings. Likewise, some highly specialized report literature or esoteric foreign area collections might be kept together and made accessible through separate files or finding guides. Archival treatment might provide a model for bibliographic access to such collections. Integration

of uniformly detailed bibliographic records in a single file is not necessarily a blessing, either to user or to library staff.

The entire concept of access, thus, bears reexamination, even though American librarianship has been predicated upon one solution, and even though this solution has been enshrined and perpetuated in the major bibliographic utilities. Bibliographic and physical access are related issues. New possibilities in dealing with either should be fully explored, both independently and in light of the other. Bibliographic and physical access can alike be subsumed under the broad rubric of collection management.

VIII. SUMMARY

We have attempted to describe the aspirations and inspirations, the data collection and analyses which have constituted the first phase of activity under the Mellon Foundation's grant to examine collection development and management at Cornell. As emphasized at the outset of this report, we have been more concerned with the analytical and planning processes than with any specific results, and we have attempted to foster a more sophisticated consciousness of the issues rather than to enforce unilaterial solutions. Staff members have been exposed to or involved in the Project on a fairly broad basis, and specific problem-solving and data-gathering exercises have improved both general and particularistic appreciations of the situation. It is our hope that these processes can be extended and cemented in the Project's second phase.

Our efforts at constructing a unified model for collection development and management have centered on identifying and elaborating the factors affecting these processes and on locating ways to evaluate each of these factors. Insofar as data collection remains incomplete, a comprehensive model remains as a goal. Furthermore, since some data elements are likely to remain intractable in the short run, a fully elaborated model may continue as an aspiration only. Even so, more understanding will certainly follow more study. The outcome of our efforts is by no means closed. We expect to make significant progress during the next phase of Project activity.

FOOTNOTES

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12. V.W. Clapp and R.T. Jordan. "Quantitative Criteria for Adequacy of Academic Library Collections." College and Research Libraries 26, no. 5 (September 1965): p. 374.

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17. "Cornell University Libraries Acquisition Policy Statement: III. Selection Responsibility." (Draft, Ithaca, N.Y.: n.p., November 1966).

18. Some of these themes are elaborated in Hendrik Edelman, "Selection Methodology in Academic Libraries," Library Resources and Technical Services 23, no. 1 (Winter 1979): pp. 33-38.

19. Surong Bulakul and Guillermo Rodríguez. Op. Cit.

20. See Robert S. Moore, "Missing Monographs in the Olin Library: A Preliminary Report," Cornell University Libraries Bulletin, no. 210 (October-December 1978), pp. 1-5, for another study which raises concerns relating to collection management. The Circulation Department has conducted a number of studies of missing volumes. Examinations of circulation records have also illustrated areas of heavy collection use. Some of these tallies were timed to supplement other data collected in conjunction with the Project.

APPENDIX I

WORKING PAPERS PREPARED AS PART OF THE CORNELL COLLECTION DEVELOPMENT AND MANAGEMENT PROJECT JULY 1977--SEPTEMBER 1979*

1. Hazen, Dan C. Collection Management and Development Project, Advisory Committee Meeting, December 5 and 6, 1977. 35 pp.

2. Moore, Robert. Missing Monographs in the Olin Library: A Preliminary Report of the Results of a Sample Inventory Completed in January 1978. February 1978.

3. Moore, Robert. Missing Monographs in the Wason Collection: A Report of the Results of a Sample Inventory Completed in June 1978. July 1978.

4. Rockey, Steven. An Informal History of the Mathematics Library. October 3, 1978. 4 pp with appendices.

5. Oakley, Robert L. Undergraduate Legal Research. November 9, 1978. 10 pp with appendices.

6. Moore, Robert. Results of the January 1979 Repeat Sample Inventory of Monographs in the Olin Library. February 1979.

7. Bulakul, Surong and Guillermo Rodríguez. Interactive Model for Managing Book Storage. January 1979. 25 pp with appendices and printout.

8. Cheng, Paul; Giok Po Oey; Dan C. Hazen; Janie Harris; Marvin Tatum; Ved Kayastha; and Eva Kronik. Book Prices and Collection Development. March 30, 1979. (Seven papers)

9. Saylor, John. Earth Sciences Collection at Cornell University Libraries. June 4, 1979. 18 pp with appendices.

10. Perushek, Diane. Proposal for Survey of Japanese Collection. Draft. (Memorandum to J. Gormly Miller dated February 13, 1979)

11. Olin Library Annex Transfer Committee. Guidelines for Selection. (First Draft) September 24, 1979. 2 pp.

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* These papers are on file in the Cornell University Libraries. They were written as informal contributions on specific questions or activities that seemed relevant to the Project.

APPENDIX II

SUMMARY LIST OF DATA COLLECTED FOR THE CORNELL COLLECTION DEVELOPMENT AND MANAGEMENT PROJECT

1. Expenditures

Expenditures by library for monographs, series and serials and binding, 1971/72 through 1978/79, with index figures.

2. Shelflist Counts

Tabulations by library and LC classes for 1973, 1975, 1977 and 1979. Changes in shelflist count by broad classes (humanities, social science, etc.) 1973, 1975, and 1979.

Shelflist count compared to volume count by LC, showing ratios of volume to title.

3. Actual Counts

Physical count by LC class by library, August 1977.

Title count by LC class for one year's growth, August 1977 through August 1978.

4. Library Growth

Library growth by volumes by library and year.

Percentage distribution of growth in volumes by library by year, compared with total Cornell library system growth, 1961/62 through 1977/78.

5. Space

Total number of shelves in main LC classes in Olin, Wason/Echols, Mann, Engineering.

A. Occupancy rates per shelf for each class.

B. Differentiated average for volume size per class per library.

6. Serials

A. Title distribution per library per class

B. Duplications

C. SOMS (Standing Orders for Monographs-in-Series)

D. Price changes of selected serials by subject, by year. 1971/72--1979.

7. Academic Activity Indicators

Faculty, graduate enrollment, graduate degrees, research expenditures by field, by year.

Appendix II (continued)

8. General

A. Ratios of titles to volumes by LC class

B. Groupings of LC class as within humanities, social sciences, science, reference/bibliography.

APPENDIX III

PROJECT CHRONOLOGY

JULY 1977--JUNE 1979

Hendrik Edelman's appointment as Project Director in July 1977 marked the first step in implementing Cornell's Collection Development and Management Project under the terms of our grant from the Andrew W. Mellon Foundation. Mr. Edelman, as the Cornell University Libraries' Assistant Director for the Development of Collections, had been closely involved in the discussions and planning which led to securing Mellon Foundation support.

Restructuring Collection Development (July--December 1977)

CUL's Division of Collection Development was created to meet two principal ends. The new structure was envisaged as part of an evolving institutional framework for collection development which would facilitate the eventual realization of all Project goals. The Division comprises a number of area studies librarians together with the Grant-supported bibliographers for Western Europe, the Social Sciences, and the Humanities. Its creation responded to the more general expectation that Project activities would promote a systemwide rationalization of collection development and management.

In 1948 Dr. Felix Reichmann was appointed Assistant Director for Technical Services, a post which at the time incorporated collection development responsibilities. Hendrik Edelman was named Assistant Director for the Development of Collections following Dr. Reichmann's retirement. During both of these periods, collection development for the University's endowed libraries was rather firmly controlled by the Assistant Director. In many subject areas, this control was exercised as a direct personal responsibility, and it necessarily involved the Assistant Director in all aspects of collection development. The Project provided an opportunity to institutionalize the collection development function at a time when individuals with the professional qualities, experience in the world of books, and academic interests common to both Dr. Reichmann and Mr. Edelman were becoming increasingly rare.

Collecting Statistical Data (October 1977--April 1979)

The Project's first year was largely devoted to the compilation of data. Ms. Beverly Hirsekorn was appointed as Mr. Edelman's statistical assistant, and she

and Mr. Edelman proceeded to formulate Project needs in terms of specific statistical data. They also assessed the analyses which could be derived from already available information. Data collection is reported in some detail in sections three to five of this report; the specific tabulations are enumerated in Appendix II.

Although most of our statistical work involved manual counts, two major analyses required mechanical manipulation. Each expanded upon work already underway in support of normal library operations, though both entailed supplemental programming and computer time. The first effort tabulated the 1977 and 1979 shelflist counts by LC class and library, and thereby supplemented the tallies already available for 1973 and 1975. The second task, funded internally by the Cornell University Libraries, centered on manipulations of the "Serials Currently Received" data base.

A volume count of current acquisitions in terms of LC class, form (monographs and serials), and source (trade publications, publications of the U.S. government, foreign governments, and international and regional organizations) is underway in several of the major units. This tally, which will cover about seventy percent of total acquisitions, will improve our understanding of current additions to the collections.

Collection Development Seminars (Fall Term, 1977; Spring Term, 1978)

From the outset, the Project was intended to engage a wide spectrum of staff members and not just confine itself to research conducted at the periphery of normal library operations. Large-scale involvement was facilitated by a series of staff seminars which were conducted by the Project Director during the fall of 1977 and the spring of 1978. These weekly seminars dealt with the background and history of academic research libraries, the nature of scholarly communication, the concept of collection development, planning for collection development, the theories and processes of selection, resource allocation, collection evaluation, and collection management. Eleven sessions were held during the Fall term and fifteen during the Spring and were attended by thirty staff members.

Seminar discussions enhanced staff members' understanding of how major collections evolve as well as their appreciation of the many aspects of collection development. Equally important, these exchanges affected both our general approach to the Project and much of the specific methodology developed to carry it out.

Project Advisory Committee

An advisory committee comprising Professor W. Donald Cooke, Vice President for Research, Cornell University; Mr. Richard DeGennaro, Director of Libraries, the University of Pennsylvania; Mr. Hendrik Edelman, Project Director and Assistant Director for the Development of Collections, Cornell University; Mr. Glyn Evans, Director of Library Services, State University of New York; Mr. Jeffrey Gardner, Management Research Specialist, Association of Research Libraries; Professor Walter Lynn, School of Civil and Environmental Engineering, Cornell University; Mr. J. Gormly Miller, Director of Libraries, Cornell University; and Professor Herbert White, Graduate Library School, Indiana University, held its first meeting in Ithaca on December 5 and 6, 1977. A detailed report was prepared by Dr. Dan C. Hazen, of Cornell's Division of Collection Development. This report, which was circulated to the committee, is now on file in the Project office.

The advisory committee met again at the Cornell Club in New York City on December 13 and 14, 1978. This session reviewed the Project's progress and methodology and reexamined some of the inspirations and suppositions which had guided its activities. Mr. Edelman also announced his imminent assumption of duties as University Librarian at Rutgers University and his consequent resignation as Project Director. He was subsequently requested to remain on the advisory committee.

Acquisition Policies and Levels of Collecting Intensity (January--August 1978)

Standardized statements of collecting intensity for some 975 collection components, as defined by LC subclasses, are being compiled. These descriptions, when collated and evaluated, should serve as the basis for collection profiles. Though the survey leader conducted interviews with many of Cornell's book selectors before her departure in August 1978, this effort remains incomplete.

Book Storage, Space, and Collection Management (September 1978--June 1979)

The Project addresses numerous questions concerned with the intellectual aspects of collection development. We have thus, for instance, examined the relationship between collections and academic programs and studied user assessments of collections. The immediate and practical problems of book storage, availability of space, and accessibility of collections are equally important. As the Project began, the University was coincidentally completing plans for a 600,000 volume book storage facility. The Annex Library was ready for use by fall of 1978.

Our original proposal recognized that the consequences of physical growth, and such related issues as loss rates, withdrawals, preservation, and the designation of materials for storage, would be major research considerations. Documentation of Annex Library procedures and policies will thus become part of the Project. Funding for these activities, however, will be entirely borne by the Annex Library's regular operating budget.

Project plans indicated that we should supplement the information generated around Annex Library operations with a more broadly applicable tool to forecast shelving and space requirements. Two graduate students in the School of Civil and Environmental Engineering prepared a report, submitted in January 1979, to satisfy this need. Their study, entitled Interactive Model for Managing Book Storage, was funded by the grant.

Other special studies have been conducted by the Olin Library's Circulation Department, which is responsible for the approximately 1,500,000 volumes in the central book collections. Three sample inventories examined loss rates in 1978 and 1979; the report titles are listed in Appendix I. We have not yet completed efforts to design a space management system or to assess the physical condition of sample books from the Olin stacks. All these collection management analyses and reports have been supported largely from regular operating funds as part of Cornell's contribution to the Collection Development Project.

Planning for the User Survey (October 1978--June 1979)

A collection's effectiveness in meeting user needs is clearly a critical element in its overall adequacy. A small committee has thus planned a survey in which users will assess collection quality and accessibility for their own fields of study. We are concerned with the research use of the collections, so this survey will be limited to faculty, research staff, and graduate students. Questionnaires are scheduled for distribution in October 1979.

Hendrik Edelman's departure at the end of 1978, and the arrival of a new University Librarian in April 1979, mandated a temporary suspension of Project activity between January and June 1979. Louis E. Martin, Cornell's incoming University Librarian, appointed retired Library Director J. Gormly Miller as Project Director and confirmed Mr. Edelman's assignment to the advisory committee.